WHAT IS CLAIMD IS:

1. A multiple view angle X-ray stereoscopic imaging method comprising the steps of:

1) obtaining the parameters of an imaging system by a method of measuring or calibrating;

2) projected image sampling: rotating a digital imaging acquisition device or an object placed in the same and making the digital imaging acquisition device and said object to generate relative circular movement or spiral movement, and acquiring a projected image $G_k(\theta)$ per θ degree, wherein θ is any value;

3) establishing image indexes: establishing two level sorted indexes for all image pixels based on the parameters of the imaging system;

4) setting viewpoint parameters: setting the viewpoint parameters of steregrams, by user, through an interactive interface according to the observation requirement in order to obtain stereograms having observation effects of different angles;

5) calculating sight line parameters: calculating the parameters of the corresponding sight line for each pixel in an image, said viewpoint parameters determine a current stereogram;

6) image indexes looking up: looking up the ray beams near to said sight line parameters in the image index table established in step 3), based on said sight line parameters calculated in step 5);

7) pixel combining: employing various filtering interpolation modes to implement the interpolation combination calculations for the near ray beams and combining an image pixel (p'(i,j)) corresponding to a sight line (L'_{ij}), according to the operational performance of computers and the requirement of user for image precision, and achieving calculations for all pixels in stereograms by repeating steps 3) to 5);

8) image processing: implementing enhancement processing for images through an interactive interface according to the requirem nts of user;

9) stereoscopic displaying: realizing display of stereograms by a stereoscopic display device such that the left eye of the user can see only the image corresponding to the view angle of left eye and the right eye of the user can see only the other image corresponding to the view angle of right eye, and that thereby a stereoscopic image is formed.

2. The stereoscopic imaging method according to claim 1, wherein said two level indexes in step 3) are angle index and distance index.

3. The stereoscopic imaging method according to claim 2, wherein step 3) further comprising:

calculating a two level sorted index storage table.

4. The stereoscopic imaging method according to claim 3, wherein step 3) further comprising:

having the sampling point of the *k*-th projected image located at the sampling viewpoint (P_k) of the sampling circle, wherein the rotation angle (θ) is the angle between a sampling central ray corresponding to the rotating central ray of an object and a reference coordinate axis located in the rotating plane, D is the radius of sampling circle, and a ray beam corresponding to a pixel p(i,j) in the projected image $G_k(\theta)$ is denoted as L_{ij};

calculating the angle (β_i) between said ray beam (L_{ij}) and the sampling central ray, the angle (α_i) between said ray beam (L_{ij}) and the reference coordinate axis, and the distance (d_i) from said ray beam (L_{ij}) to the rotating center of an object based on the parameters of the imaging system; and

storing said angle (α_i) and said distance (d_i) corresponding to each column of each image in said two level sorting index table to establish indexes.

5. Th stereoscopic imaging method according to claim 1, wherein step 4) of setting viewpoint parameters comprising:

setting, by users, the parameters including the position of viewpoint, the direction of observation sight line, the body of visual scene, and the parallax parameters of stereoscopic display, etc, by interactive operations.

6. The stereoscopic imaging method according to claim 1, wherein step 5) of calculating sight line parameters comprising:

calculating the angle (α_i') between a sight line (L_{ij}') corresponding to said pixel point (p'(i,j)) and a reference coordinate axis and the distance (d_i') from said sight line (L_{ij}') to the rotating center of an object;

calculating the value of image line number j corresponding to the height of said sight line (L_{ij}') using the distance from the rotating center of an object to the source; and

calculating the stereogram corresponding to the left and right eyes based on viewpoint parameters using the same method, wherein the two viewpoints depart a distance of (t_c) in the direction perpendicular to the center of sight lines.

7. The stereoscopic imaging method according to claim 1, wherein the number and selecting mode of the near ray beams in step 6) are related to the image pixel combination filtering method selected at step 7).

8. The stereoscopic imaging method according to claim 1, wherein the filtering interpolation method in step 7) includes the nearest interpolation, bilinear interpolation, quadratic interpolation, etc.

9. The stereoscopic imaging method according to claim 1, wherein said processing for image in step 8) includes gray transformation, pseudo color, edge enhancement, etc, to enhance the stereoscopic display.

10. The stereoscopic imaging method according to claim 1, wherein user can change the position of observation viewpoint, the direction of observation sight line, and the parallax continually to achieve the examination effect of multiple angle stereoscopic displaying, by repeating steps 2) to 7).

11. A multiple view angle X-ray stereoscopic imaging system comprising an X-ray imaging device formed of an X-ray source (1) and a flat plate X-ray detector (3), a table (2) which can rotate in multiple freedom, a scan control and data acquisition unit (4), a multiple freedom control unit (5), a stereoscopic display graphical card (7), an image analysis and processing unit (6), a display unit (8), and a pair of stereoscopic eyeglasses (9),

wherein said X-ray digital imaging acquisition device is used for implementing a circular or spiral trace scanning;

said scan control and data acquisition unit is used for obtaining the parameters of an imaging system by a method of measuring or calibrating, and for rotating the digital imaging acquisition device or an object placed in the same and making the digital imaging acquisition device and said object to generate relative circular movement or spiral movement, and acquiring a projected image $G_k(\theta)$ per θ degree, wherein θ is any value;

said image analysis and processing unit (6) is used for establishing image indexes: establishing two level sorted indexes for all image pixels based on the parameters of the imaging system; for setting viewpoint parameters: setting the viewpoint parameters of stereograms, by users, through an interactive interface according to the observation requirement in order to obtain stereograms having observation effects of different angles; for calculating sight line parameters: calculating the parameters of corresponding sight line for each pixel in images, wherein the viewpoint parameters determine a current stereogram; for image indexes looking up: looking up the ray beams near to said sight line parameters in said image index table, based on said sight line parameters calculated in step of calculating the parameters of sight line; for pixel combining: employing various

filtering interpolation mod s to implement the interpolation combination calculations for the near ray beams and combining an image pixel (p'(I,j)) corresponding to a sight line (L_{ij}), according to the operational performance of computers and the requirement of user for image precision, and thereby achieving calculations for all pixels in stereograms; for image processing: implementing enhancement processing for images through an interactive interface according to the requirements of user; and for stereoscopic displaying: realizing display of stereograms by a stereoscopic display device such that the left eye of the user can see only the image corresponding to the view angle of left eye and the right eye of the user can see only the other image corresponding to the view angle of right eye, and that thereby a stereoscopic image is formed.

12. The X-ray stereoscopic imaging system according to claim 11, wherein said table (2) is located between said X-ray source (1) and said flat plate X-ray detector (3), said scan control and data acquisition unit (4) acquires the image data sent from the flat plate detector (3) by a data acquisition card, and acquires the scan position information about the table (2) sent from the multiple freedom control unit 5 by a communication port, said image analysis and processing unit (6) achieves image processing and combines stereoscopic images, based on the data sent from the scan control and data acquisition unit (4), said image analysis and processing unit (6) displays the stereograms inversely on the display unit (8) through the stereoscopic display graphical card (7), and drives the pair of stereoscopic eyeglasses (9).

13. The X-ray stereoscopic imaging system according to claim 11, wherein the two level sorting indexes established by said image analysis and processing unit (6) based on the parameters of an imaging system are angle index and distance index.

14. The X-ray stereoscopic imaging system according to claim 12, wherein said image analysis and image processing unit (6) is further used for calculating a two

level sorted index storage table.

15. The X-ray stereoscopic imaging system according to claim 13, wherein said image analysis and processing unit (6) makes the sampling point of the *k*-th projected image located at the sampling viewpoint (P_k) of the sampling circle, the rotation angle (θ) of the *k*-th projected image is the angle between a sampling central ray corresponding to the rotating central ray of an object and a reference coordinate axis located in the rotating plane, D is the radius of sampling circle, a ray beam corresponding to a pixel (p(i,j)) in the projected image $G_k(\theta)$ is denoted as L_{ij}, an angle (β_i) between said ray beam (L_{ij}) and the sampling central ray, an angle (α_i) between said ray beam (L_{ij}) and the reference coordinate axis, and a distance (d_i) from said ray beam (L_{ij}) to the rotating center of an object are calculated based on the parameters of the imaging system, and said angle (α_i) and said distance (d_i) corresponding to each column of each image are stored in said two level sorting index table to establish indexes.

16. The X-ray stereoscopic imaging system according to claim 11, wherein said image analysis and processing unit (6), by interactive operations, enables user to set the parameters including the position of viewpoint, the direction of observation sight line, the body of visual scene, and the parallax parameters of stereoscopic display, etc.

17. The X-ray stereoscopic imaging system according to claim 11, wherein said image analysis and processing unit (6) calculats sight line parameters in the following manner:

calculating the angle (α_i') between a sight line (L_{ij}') corresponding to said pixel point (p'(i,j)) and a reference coordinate axis and the distance (d_i') from said sight line (L_{ij}') to the rotating center of an object, and calculating the value of image line number j corresponding to the height of said sight line (L_{ij}') using the distance from the rotating center of an object to the source; and

calculating the stereogram corresponding to the left and right eyes based on viewpoint parameters using the same method, wherein the two viewpoints depart a distance of (t_c) in the direction perpendicular to the center of sight lines.

18. The X-ray stereoscopic imaging system according to claim 11, wherein the number and selecting mode of the near ray beams in said image analysis and processing unit (6) are related to the selected image pixel combination filtering method.

19. The X-ray stereoscopic imaging system according to claim 11, wherein said filtering interpolation method, implemented by said image analysis and processing unit (6), includes the nearest interpolation, bilinear interpolation, quadratic interpolation, etc.

20. The X-ray stereoscopic imaging system according to claim 11, wherein said image processing, implemented by said image analysis and processing unit (6), includes gray transformation, pseudo color, edge enhancement, etc, to enhance the stereoscopic display.

21. The X-ray stereoscopic imaging system according to claim 11, wherein said image analysis and processing unit (6) implements said projected image resampling, establishing image indexes, setting viewpoint parameters, image index looking up, and pixel combination repeatedly such that users can change the position of observation viewpoint, the direction of observation sight line, and the parallax continually to achieve the examination effect of multiple angle stereoscopic displaying.